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ABSTRACT

This paper identifies the most critical factors pertinent to career guidance as: (1) use of humanistic psychology, (2) development of decision competency, (3) career planning and selection, (4) educational planning and relevance, and (5) the development of positive human relations skills as marketable skills. It describes computer-based programs (systems) developed at The University of Wisconsin-Milwaukee during the past seven years that seek to deal directly with each of such critical factors. The report explains the use of a method called "O-P-A-H-U-D-E" where emphasis is placed on the activity of students as opposed to the activity of faculty; where "information about" (theory) leads directly to "experience with"; where computerized gaming and simulation make use of surrogate role playing in relation to multiple assigned roles in some "meaty" (exaggerations of typical) social problems; and where career guidance is maintained to be at its best. The principles of humanistic psychology are introduced and utilized throughout.
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USE OF COMPUTER IN RELATION TO CRITICAL GUIDANCE FACTORS

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(Abstract)

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USE OF COMPUTER IN RELATION TO CRITICAL GUIDANCE FACTORS

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The single most critical of all guidance factors must of necessity deal directly with manpower national resources, and this always means getting the right man in the right job (Marland, 1972; and Cassel and Mehail, 1973). Indeed, the productivity of a nation's manpower derives alone from such a consideration. Much more important than productivity is the morale of people, but which derives directly from their own personal efficiency in productivity, and which under the principles of humanistic psychology leads to their own self-actualization. Then too, the most cherished possession of men everywhere remains human freedom, and the only real freedom that man ever knows is the degree to which he becomes self actualized, or the degree to which he makes use of his own full potential for productivity.

As a nation progresses from a typical agrarian economy to a characteristic industrial economy, the number and complexity of job career areas necessary increases significantly. As the number and complexity of job career areas increases, the need for more effective career guidance of individuals becomes the more critical. Today The United States Department of Labor Dictionary of Occupational Titles lists approximately 65,000 different job areas. No guidance counselor could conceivably remember precise details of even a small fraction of that colossal listing. The computer, on the other hand, is able in the most precise manner possible to retain an unlimited number of job area requirements, with the most current up-dating possible.

Curricular offerings in both the elementary and secondary schools of our nation can be relevant in the minds of students only to the degree to which

they perceive such activities as useful in their personal and social living. The single using agencies of the schools remain the employers who hire the student graduates, and the worth of an employee must in the final analysis be measured in terms of the marketable skills possessed. Thus, the expected outcomes of effective vocational guidance must be measured in terms of the number and quality of marketable skills possessed by student graduates.

At the beginning of the 12th grade in the U.S. characteristically more than about 80 percent of the students vow that they will go on to college, but typically fewer than half that number matriculate in educational pursuit beyond high school the following year (Marland, 1972a). More than half of those who actually matriculate in post-high school educational pursuit even a year later have no clear idea of their career goals being prepared for. At the end of the first year after high school 1 out of every 3 students insist that their career goals established while in high school were no longer acceptable (Flanagan, et.al., 1962). These are the kind of facts that the U.S. Commissioner of Education, Sidney P. Marland, Jr. is referring to when he maintains, "We are embarrassed by many ugly statistics" (Marland, 1972b).

Critical Guidance Factors

Vocational career guidance is not something that exists independent of either the curricular offerings in a school, or of the students involved in the learning process and activity. Rather, it is something that is intimately related to both of these phenomena.

Humanistic Psychology

The principles of humanistic psychology establish the context in which effective career guidance alone can emerge; for at the near center of the guidance process there is a very unique human being that makes a difference (Buhler, 1969; Rogers, 1973; and Cassel, 1973a). Each of these principles serves to set the stage and establish perimeters, and to violate any one of

them serves only to weaken the career guidance process. This is not intended as a discourse on humanistic psychology, but the basic principles are highly germane as critical guidance dynamics:

- (1) FEELINGS CRITICAL - feelings are paramount and derive largely from hidden communications of people.
- (2) FOCUS ON PURPOSE - all human activities are designed to achieve well established goals or needs based on personal satisfactions.
- (3) NEED HIERARCHY - more basic needs in man must be reasonably well met before one is able to deal with cognitive and social areas.
- (4) INTRINSIC VALUE OF ACTIVITY - activity must be an "end" with "intrinsic" value; not a "means" with "extrinsic" value.
- (5) PERSONAL GROWTH - learning must lead to personal growth of the individual and serve to increase personal welfare of individual.
- (6) AUTONOMOUS - man is a "free will" agent, but competency in decision process alone can insure this status.
- (7) LOVE OF KNOWLEDGE - permits individual to unfold, become undressed, and scrutable both psychologically and spiritually.
- (8) GAMING SPIRIT - seeks to capture the play spirit of the child with all of its characteristic spontaneity and sincerity of purpose.
- (9) IDENTIFICATION WITH MEN - strong and enduring interest in the continued improvement of man's welfare.
- (10) STRONG DEMOCRATIC VALUES - rich and poor, Black and White, old and young all are alike, and the group determines the rules for play.
- (11) FRESH APPRECIATION OF PEOPLE AND WORLD - people not dulled with feeling that each new experience is same old hat, but stimulating and new.
- (12) SELF-ACTUALIZATION - man is truly himself only when he is making full utilization of every potential for own self destiny.
- (13) TRANSCENDENTAL MEDITATION - man is able to utilize new levels of reality and capable of mind control through biofeedback techniques.

(14) COMPETENCY LEARNING - "mastery" deals with "knowledge about" but

"competency learning" proceeds to "experience with".

(15) HUMAN FREEDOM - ranges on scale from "freedom from want" through self-actualization to space for freedom of movement with self-awareness.

Decision Making Competency

Until and unless an individual has developed decision making competency one can not be expected to deliberate on career planning; any more than one could be expected to render a concert without the development of musical skills. Failures in vocational guidance must be attributed directly to competency in decision making of the individual; for this is the vehicle alone that generates; not the notions of one's parents or the guidance counselor.

It is not mere coincidence that drug abuse, delinquency, and crime have been increasing in somewhat the same degree as the complexity of jobs have increased. There is every evidence to suggest that such atypical behavior is a symptom of real and progressively increases in failures of career guidance in our schools; that the 70,000 guidance counselors are not without blame in this regards. If we are to deal with accountability in this regards we can be assured that persons lost in the activities of gainful productivity are not likely victims of drug abuse, delinquency, and crime.

Precisely the same decision competency that is a necessary requisite for effective career planning is equally a necessary requisite for the prevention of drug abuse, delinquency, and crime. The continued progressive increase in atypical behavior (drug abuse, delinquency, and crime) attests boldly to the real empirical absence of decision making competency on the part of individuals, and one can not psychologically expect such behavior to be changed even a mite without improved competency in decision making. The "Back to religion" movement, so characteristic of a Christian nation like the United States, can only serve as a temporary relief; for it promises the individual that someone outside of the individual will be responsible for control. It was Christ who took the

single talent from the lady who failed to use it, and gave additional talents to the one with the many talents who used them.

Decision making is learned behavior, not unlike every other psychological process, and it is somewhat a kin to similar mathematical processes typically learned in the school. The decision making competencies of individuals may be improved through systematically organized "mastery" and "competency" activities and experiences; not unlike that of every other human competency. It is the most critical of all human learning, for it serves as the fulcrum on which human freedom is attained and achieved. It is the single vehicle by which man must seek to gratify his higher needs and achieve self-actualization, there can be no substitute.

Career Guidance Function

Individuals in a Democracy have a right to the opportunity to be able to discover and identify their strong and weak talents, and to be able to relate such discoveries to meaningful career planning. Each and every citizen of a Democracy has the right to expect to consider the full repertoire of job careers available in the narrowing of career planning choices. This, then, is the nature of career guidance we have come to know as a professional and scientific discipline.

Where the relevancy of curricular offerings are challenged by large numbers of students it must be considered to represent a failure in career planning and guidance. When ever the concept of relevancy of curricular offerings is raised, there must be career guidance to resolve the issue. No other logic will suffice. This, to be sure, does not mean that avocational skills and avocational pursuits are unrelated to marketable skills; for anything that pertains to the welfare of the individual contributes directly to his own personal productivity.

If, as Jung maintained, back of every successful man there is a woman, and back of every successful woman there is a man (each the personal image of an

ideal mate); so back of every successful and happy family there is a successful job. Not unlike drug abuse, delinquency, and crime the progressive increase in divorce is just another symptom in our failure in career guidance. The problem of relating personal interests, aptitudes, and values to job requirements constitutes the process of career guidance as we know it in the present state of the art. Computer based programs promise to improve this process immeasurably.

Educational Guidance Function

In an industrial economy where complexity progresses uninhibited the educational guidance follows logically to career planning. Indeed, the one can not be conceived independent of the other. It is becoming increasingly obvious from the work of Benjamin Bloom and Kenneth B. Clark that educational opportunity in the past has established a myth of "individual differences" in the intelligence of individuals of alarming proportions (Bloom, 1973). If, as Bloom and Clark attest, every healthy normal individual is capable of perfect mastery in learning situations, where teachers know how to teach them, the concept of educational guidance takes on new and unheard of dimensions. More and more we come to realize from emerging research (Flanagan, 1962) that the social climate, attitude, and context in which behavior occurs is far more important as a causative dynamic of success or failure than what has been traditionally attributed to intellectual capability of individuals.

Human Relations

Last, but not least, a critical factor in career guidance is the human relations of people. The great mass of promotions in both industry and government are based largely on how well one gets along with others; not on how competent one is technically. This, to be sure, is as one would expect under the principles of humanistic psychology. The heart of human relations must deal with first understanding what causes people to like each other, and the usual consequence of such behavior. Second, what causes people to dislike each other, and the consequence of such behavior. Indeed, human relations must

be considered to be another indispensable marketable skill that is developed; not unlike that of decision competency. We have not placed too much emphasis on academic barriers in the past, but we have failed to place enough emphasis on aspects of personal development, and have too often failed to go beyond mastery learning (knowledge about) to competency learning (experience with) in relation to much of what is important in the life space of individuals.

DEDEV

The Computerized Decision Development System (DEDEV) is designed as a means for developing decision competency in individuals. It is comprised of 14 regular modules and 6 supplementary modules for use as a credit course in high schools or college. Each separate module is an independently organized program of experiences dealing with different dimensions involved in the decision making process.

MODULE I - Introduction to DEDEV.

MODULE II - Humanistic Psychology.

MODULE III - Locus of Control.

MODULE IV - Functions of the Ego.

MODULE V - Models of Excellence.

MODULE VI - Systems Analysis.

MODULE VII - Vector and Valence Analysis.

MODULE VIII - Conscience and Ego-Ideal Development.

MODULE IX - Deliberation Literacy Hierarchy.

MODULE X - Group Leader Decision Pattern.

MODULE XI - Power and Decision Making.

MODULE XII - Organizational Climate and Management.

MODULE XIII - Decision Counseling in Helping Relationships.

MODULE XIV - Dynamics of Human Freedom.

MODULE XV - Levels of Human Freedom.

MODULE XVI - Functions of Human Brain,

MODULE XVII - Steps in Transcendental Meditation and Mind Control.

"O-P-A-H-U-D-E" Method Utilized

The method utilized for implementation of DEDEV makes use of a technique referred to by the acronym "O-P-A-H-U-D-E", with each letter in the acronym representing a separate aspect of the procedure. The method makes use of both a conventional and an nonconventional approach.

Conventional approach. This aspect makes use of the first four letters in "O-P-A-H-U-D-E", and with the letters standing for the following activities:

- O - ORIENTATION - where individuals are informed as to expected outcomes, and where the stage is set for such outcomes to emerge.
- P - PRESENTATION - where a half hour video tape by an authoritative person presents the theoretical discussion of MODULE.
- A - ASSIMILATION - where teacher or paraprofessional discusses theory presented for relating it to experience of subjects.
- H - HUMANIZATION - where theory is related to persons through the experiences of the participants.

Nonconventional approach. This aspect makes use of the last three letters of "O-P-A-H-U-D-E" and with the letters standing for the following experiences and activities:

- U - UTILIZATION - where computer-based gaming and simulation assigns individuals to surrogate roles at cutting edge of confrontation with "meaty" social problems.
- D - DIFFERENTIATION - where participants are assigned similar surrogate roles in precisely same social meaty problems, but this time as confronters or exploiters.
- E - EVALUATION - where the computer provides immediate knowledge of progress or success with knowledge of degree of such success.

Mastery to Competency

Typically, the conventional approach utilized in O-P-A-H-U-D-E is expected to yield information about, or mastery of theory in relation to the various dimensions or MODULES of DEDEV. The nonconventional approach seeks to provide empirical experience in the utilization of such newly presented theory in a variety of contexts, and ranging from use of confrontation to being confronted. A "meaty" social problem for purposes of DEDEV is defined as an exaggeration of the typical conditions, and representing situations that can and do happen, but that would be expected to be the exception to the rule. Range of choices provided always include positions of (1) conformity, (2) antithesis of conformity, and (3) middle-of-road. In addition, there are two other choices representing varying degrees of referenced continuum. For every choice both hazards and consequences are programmed into the computer. Always, hazards represent future risks that are external to individual; while likely consequences represent past tense with impact present on individual. Correct answers programmed into computer range from normative base for corresponding persons (typical persons 12 to 18 years of age), to theoretically assigned correct responses based on theory involved, i.e., BASPAT assigns each of four answers as being (1) autocratic submissive, (2) democratic parliamentarian, (3) autocratic aggressive, or (4) laissez faire, and depending on the definition given by Lewin in his now famous Iowa studies (Barker, et.al., 1943).

Evaluation of DEDEV

A number of different evaluative studies have been accomplished on DEDEV, some of which are still in progress (Nault, 1973; and Reise, 1973). The first important evaluation was of an informal type accomplished by American Institutes for Research (Tiedeman, 1972). This study was very favorable and suggested that DEDEV become the nucleus of a doctoral program in the helping relationships area. The second study was accomplished by The Far West Research Laboratory and was equally positive in findings, and it was of the same observational type as was

the AIR study (Keyes, 1972). Next came the Kim Wyman informal assessment where he asked to use these programs for a group of colleges in Australia, and where he suggested that DEDEV was one of two such programs in the United States that were ready for school in his written report. DEDEV was a portion of treatment provided approximately 250 parolees in 1968-69 with recitivism being reduced from high in the 60's percentages to low in the 20's percentages (Mehail, 1971). A formal study was accomplished making use of ROTC students at The University of Wisconsin-Milwaukee, and it was equally positive in findings for support of DEDEV (Cassel and Stroman, 1973-pending). Two separate doctoral dissertations now under way-one with high school students and the other with college students deal squarely with formal aspects of an evaluation of DEDEV (Nault, 1973; and Reise, 1973).

Computer Soft-ware

The computer program for driving DEDEV has been written in a number of different higher level computer languages: (1) FORTRAN IV, (2) FORTRAN V, (3) BASIC, (4) ALGOL, and (5) ASSEMBLER for the PDP-8.

VOCGUYD

The Milwaukee Computerized Vocational Guidance System (VOCGUYD) was developed jointly by Professor Cassel of The University of Wisconsin-Milwaukee and persons in the Guidance Department of The Milwaukee Public Schools (Terry Mehail, Alfred Thurner, and Ralph Onerheim).

Career Choice Field

All 293 job career areas listed in the U.S. Department of Labor Occupational Outlook Handbook, 1970-71 Edition with their primary "shredouts" (instead of 1 nurse, several nurses of different specialties; instead of 1 college professor, several college professors of different specialties; instead of 1 physician, several physicians of different specialties; etc.) were included. This represents a total of 1,187 job career areas, covering the entire range of the DOT

(Dictionary of Occupational Titles) 22 Job Skill Requirement Areas. This included, for example, 47 jobs in art, 30 in business relations, 85 in clerical, 41 in counseling and social work, 92 in crafts, 37 in education and training, 47 in elemental work, 59 in engineering, 36 in entertainment, 43 in farming and fishing, 189 in machine work, etc.

Search and Screening Criteria

Seventeen different "search and screening" criteria are included in VOCGUYD in four different areas of concern: (1) Personal Interest of Participant, (2) School Success, (3) Special Aptitude, and (4) Work Values.

Personal interest. Here six different criteria are available, each one dealing with a different aspect of personal interest of the individual, but with a great deal of overlap among some of them: (1) Kuder Occupational Interest Inventory areas, (2) Social levels of Goodenough Socio-economic Hierarchy, (3) Data, persons, or things from DOT; (4) school level desired to attain for entry in to job, (5) DOT Job Skill Requirement Areas, and (6) Ohio Interest Survey scores. A participant may request to search and screen from among the 1,087 jobs by use of either of these six criteria. If an individual, for example, selects the Kuder, the computer promptly displays the 10 different areas of the kuder (outdoor, mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, and clerical), and asks which of them is of interest for the narrowing of career choices. The same general procedure would be followed if one of the other six criteria were selected.

School success. This criterion makes use of the individual's Grade Point Average (GPA), and is merely used to determine if an individual's past school success warrants inclusion of semi-professional and professional job areas.

Special aptitudes. This was designed to make use of multiple aptitude test scores for the narrowing of career choices, and includes six of the areas from The Differential Aptitude Test Battery: (1) Verbal Ability, (2) Numerical Ability, (3) Abstract Reasoning, (4) Clerical Speed and Accuracy, (5) Mechanical Reasoning, and (6) Space Relations. These may be used as the basis for search

and screening, or as a means to check one's special aptitude against an interest area selected. If one of the six personal interest criteria are used for search and screening, critical special aptitudes are depicted for jobs selected (meaning that a T-score of 50 or better is generally suggested for success in that area of aptitude).

Work values. The four factor areas of the Super Work Values Inventory are used for this area: (1) Material, (2) Goodness of Life, (3) Self-Expression, and (4) Behavior Control. These four areas may be used precisely as described for the special aptitude areas.

Interrogation Function

Generally, five questions critical to each of the separate 1,1087 job career areas are programmed into the computer. These questions have been compiled by approximately 100 Career Advisory Board Members to the Milwaukee Public Schools; with persons from specific job skill requirement areas writing the questions for their own areas of competence. Each of the questions is weighted in terms of importance to success in the job area. The purpose of questions is to make use of the computer to relate the participant's personal interest, school success, aptitude, or work values to the specific job requirements. After a computer interrogation for a particular job, a Career Success Index (CSI) is provided depicting degree of agreement between the interests expressed by the participant and the job requirements.

Career Success Index

Individuals are expected to proceed with the VOCCUYD search and screening until a minimum of from 3 to 5 CSI's of average or better are obtained. Such job areas are then the subject of a more intense and concentrated investigation with the assistance of a Vocational Guidance Counselor. VOCCUYD is not intended to replace the counselor, but to supplement such services.

Fostering Career Maturity

Where individuals are not concerned with identifying specific career

job areas, but rather with the development of "Career Maturity", as is typically the case for the junior high school student, or with elementary school age students, from 5 to 8 individuals may work with a single teletype or Cathode Ray Tube (CRT) as an "I-O" Station to the computer.

Auxiliary Programs

A whole series of career related Computer Assisted Instruction (CAI) programs are included with VOUGUYD. For example, each of the 17 search and screening criteria are the subject of such an auxiliary program. Individuals desiring information on such criteria may ask computer for such a CAI program. Similarly, tests typically associated with career planning are also the subject of such CAI units, i.e., GATB, NATB, DAT, etc. Other subjects, for example, include: women, economics, job satisfaction, etc.

EDGUYD

The Milwaukee Computerized Educational Guidance System (EDGUYD) was developed jointly by Terry Mehall of the Milwaukee Public Schools, and Professor Russell Cassel of The University of Wisconsin-Milwaukee. VOUGUYD and EDGUYD are considered to be intimately related programs. Indeed, EDGUYD functions much the same as was described for VOUGUYD. Instead of job career areas for EDGUYD, four year post-high school educational facilities are the subject matter and concern. For Wisconsin, not only four year colleges, but all post-high school facilities of any type are included. EDGUYD includes 1,811 post-high school facilities, with 130 being from Wisconsin. States like Alaska, Wyoming, Guam, and Virgin Islands only have 1 or 2 schools; while states like California and New York each have more than 100 (103 and 151, respectively).

Search and Screening Criteria

There are 12 different search and screening criteria, each one based on a three digit number: (1) State or Location, (2) Type of School, (3) Type of Student Body, (4) Institutional Control, (5) Admissions Policy, (6) Enrollment, (7) Cost, (8) Type of Community, (9) Special Considerations, (10) Type of

Degrees Conferred, (11) School Term, and (12) Proximity to Milwaukee.

Interrogation Function

Five or more questions have been programmed into the computer for each of the 1,811 schools included. Where an individual selects a school of interest, the computer begins the interrogation along the same lines as for VOCGUYD. Here the objective is to narrow choices from the total available schools to a few for more intense study with the aid of a guidance counselor. The interrogation by the computer is designed to relate the interests of the individual with specific school requirements. Again, each of the interrogation questions is assigned a percentage value or index, with all questions for a particular school always adding up to 100 percent. At the end of each such interrogation, the computer provides an Educational Success Index (ESI) that depicts degree of agreement between personal interest of subject in relation to school requirements.

Educational Success Index

As with the case of VOCGUYD participants are expected to proceed with the EDGUYD program until they have produced from 3 to 5 CSI's of "Average" or better as a basis for more intense and concentrated research and study, and for purpose of working with the Guidance Counselor. Again, the EDGUYD program is not intended as a substitute for the counselor, but rather a supplement.

Auxiliary Programs

A number of typical CAI programs related to educational guidance have been programmed into the computer, and may be used in connection with EDGUYD. These CAI programs, for example, include tests dealing with education such as: (1) DAT, (2) Iowa Tests of Educational Development, (3) Meaning of I.Q., (4) Preliminary Aptitude Test Battery, (5) Scholastic Aptitude Test Battery, etc. It includes the "Mastery Learning" concept of Bloom, the "Critical Development Levels" of Havighurst, and a series of programs dealing with securing finances for a

a post-high school educational pursuit.

Fostering Career Maturity

Just as with VOCGUYD from 5 to 8 persons can work at a single console with EDGUYD for purposes of developing career maturity. This would be the characteristic manner for use of EDGUYD by junior high school and elementary age students.

HUMRELAT

The Computerized Human Relations Program (HUMRELAT) was designed as a means for developing human relations positive skills in individuals. It is planned as a 3 credit course for a lower division college program, and may be profitably used by high school students for credit, as well. Eight different MODULES are included in HUMRELAT, each designed for a two week period of intensive study and experiences:

MODULE I - Social Climate.

MODULE II - Scientific Decision Process.

MODULE III - Interpersonal Attraction.

MODULE IV - Interpersonal Rejection.

MODULE V - Confrontation and Crisis.

MODULE VI - Group Process and Balancing.

MODULE VII - Disadvantaged.

MODULE VIII - World Social Problems.

Based On Research Findings

HUMRELAT represents the "end product" of a careful review and study of course descriptions of the 17 different technical institutes in Wisconsin. The teachers of human relation courses in each of the 17 technical colleges were asked to indicate their specific preference for inclusion in such a course from a questionnaire (Cassel, Atwood, and Lie, 1973). The questionnaire included 21 major topic headings with 84 subtopical ones. It was compiled from the existing courses in human relations presently featured at the 17 colleges.

The eight different modules contained in HUMRELAT are those clusters of related subtopics from the questionnaire receiving the highest ratings by the faculty at the 17 technical colleges. The sequencing of the modules was based on psychological continuity.

"O-P-A-H-U-D-E" Method Utilized

The "O-P-A-H-U-D-E" described under DEDEV is used with HUMRELAT. Both the conventional and nonconventional aspects are included. Half hour video tapes are available for presentation of each of the modules by an authoritative figure. The development of positively orientated human relation skills is deemed as the most important expected outcome, and which are considered to be indispensable marketable skills in relation to manpower resources of a nation.

CASTY

The UWM Computerized Case Study Analysis (CASTY) is a program designed for use in the "School Psychology Practicum", but may be appropriately used for a wide range of other purposes. Here real live cases are programmed into the computer, and participants may engage in dialogue with such persons as in real life. Participants inform computer from what vantage questions are directed and all previously derived information from that respective vantage will be recalled on the cue of key words or phrases. When questions are directed at the subject, answers are in first person, viz., What is your name? My name is Jennienoread, or Jodifferent, etc. Questions directed at the psychologist, physician, teacher, etc., for example, are answered in third person, viz., Do you know the subject involved in this study (to family physician)? Yes, I have been the family physician, was present at her birth, and know Jennienoread well. CASTY could be used for empirical experience in diagnosing confrontation, crisis, and exploit in every conceivable arena of life.

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